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## GRC Environmental Programs Manual—Chapter 6

# Sustainability, Pollution Prevention and Recycling

*Approved by: Energy and Environmental Management Office Chief*

*Distribution: BMS Library*

**NASA - Glenn Research Center  
Cleveland, OH 44135**

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### Change Record

Revision	Effective Date	Expiration Date	C-25, Change Request #	Description
A	4/2015	10/2016		Corrected name of office on title page Section 5.0 – Changed “collaborate” to “collaborative” Section 5.1, fifth bullet: Changed “informs” to “inform” Section 5.4, first bullet: Changed “Participate and supports in” to “Participate in and support” Updated links and corrected form names

*\*\*Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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## Chapter 6.—Sustainability: Pollution Prevention and Recycling

***NOTE:** This chapter is maintained and approved by the Energy and Environmental Management Office (EEMO). The last revision date of this chapter was March 2015. The current version is maintained on the Glenn Research Center internet at <http://www.grc.nasa.gov/WWW/FTD/EEMO/index.html>. Approved by: Chief, Energy and Environmental Management Office.*

### 1.0 PURPOSE

This chapter delineates GRC's guidance for preventing pollution, reducing waste, conserving energy, and preserving natural resources to satisfy Executive Order (EO) **13514**, Federal Leadership in Environmental, Energy, and Economic Performance, requirements, NASA's Strategic Sustainability Performance Plan and RCRA waste minimization requirements

In compliance with the NASA Strategic Sustainability Performance Plan, this chapter establishes policies and procedures for reducing waste, reducing pollution, reusing of materials, and recycling of solid waste generated at the NASA Glenn Research Center (GRC). The requirements of GRC's Environmental Management System (EMS) specified in NASA Policy Directive (NPD) **5800.1**, NASA Environmental Management, NASA Procedural Requirements (NPR) **8553.1**, NASA Environmental Management System, and International Organization for Standardization (ISO) 14001 as defined in Glenn Level Procedural Requirement (GLPR) **8553.1**.

### 2.0 APPLICABILITY

This chapter is applicable to all civil servant and contractor employees assigned to GRC or associated with GRC who generate waste. GRC shall eliminate or reduce pollution at the source through process changes, reengineering material substitution, and education. The following source-reduction elements are included:

- Quantity of each chemical entering the waste stream or being recycled, treated, or disposed of
- Best management practices opportunities for source reduction
- Techniques to identify source-reduction opportunities

### 3.0 BACKGROUND

Executive Order (EO) **13514**, Federal Leadership in Environmental, Energy, and Economic Performance, requires Federal agencies to consider life-cycle costs and savings to reduce waste, energy, water consumption, and other possible detrimental environmental effects, while achieving sustainable behaviors.

This guidance is designed to be consistent with the requirements of laws and regulations (Federal, state, and local); EO **13514**; NASA mission and policies; other EOs; the Federal policy on sustainability; Environmental Excellence for the Twenty-First Century, a NASA strategy document; other NASA policies; and GRC's environmental policies and programs.

GRC is committed to environmental protection consistent with environmental laws and regulations outlined in EO **13514**, which requires agencies to measure, manage, and reduce greenhouse gas emissions toward Agency-defined targets. It describes the process by which agency goals shall be set and reported to the President. EO **13514** also requires agencies to meet a number of energy, water, and waste-reduction targets, including

- 30-percent reduction in vehicle fleet petroleum use by 2020
- 26-percent improvement in water efficiency by 2020
- 50-percent recycling and waste diversion by 2015
- Sustainability requirements met by 95 percent of all applicable contracts by 2010
- Implementation of the 2030 net-zero-energy building requirement
- Implementation of the storm water provisions of the Energy Independence and Security Act of 2007, Section 438

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- Development of guidance for sustainable Federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency (EPA).

**NOTE:** On October 5, 2009, President Obama signed EO [13514](#), which sets sustainability goals for Federal agencies and focuses on making improvements in their environmental, energy, and economic performance. “This EO builds on the momentum of the Recovery Act to help create a clean energy economy and demonstrates the Federal government’s commitment, over and above what is already being done, to reducing emissions and saving money.

#### 4.0 POLICY

GRC has adopted an environmental policy as part of the recently adopted EMS, which states: “GRC operates in a manner that preserves and protects the environment through pollution prevention, the continual improvement of our operations, and complying with regulations.”

The guidance is designed to conform to the requirements of EO [13514](#), setting sustainability goals for Federal agencies, and it focuses on making improvements in their environmental, energy and economic performance. This requires Federal agencies to establish a goal for solid waste diversion. GRC is committed to reducing solid waste and diverting it from landfills. This recycling source shall operate in conformance with local, state, and Federal codes, standards, requirements, and permit conditions and in line with the U.S. EPA and Ohio EPA waste-disposal regulations and shall follow the guidance in the following documents:

- EO [13514](#), Federal Leadership in Environmental, Energy, and Economic Performance
- NPR [8530.1](#), Affirmative Procurement Program and Plan for Environmentally Preferable Products (This document sets policy to reduce the amount of material ending up in landfills through the procurement of environmentally preferable goods and services.)
- Section 6002 of the RCRA (This section is required by the EPA to issue Comprehensive Procurement Guidelines (CPGs) containing designated items that are or can be made with recovered materials.)
- Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy
- Ohio Revised Code (ORC), Title 37, Chapter 3734, Ohio Solid and Hazardous Waste Disposal Law
- DOD 6050.5, U.S. Government Disposal Methods Guidelines
- Defense Reutilization and Marketing Service (DRMS)–M 6050.1, Environmental Compliance for the DRMS Hazardous Property Program, June 1990 edition (newest version)

#### 5.0 RESPONSIBILITIES

A collaborative effort between GRC employees, the Logistics and Technical Information Division, the Facilities Division, and the Procurement Management Division strive to implement a more sustainable environment. Sections [5.1](#) to [5.6](#) list the responsibilities for each area.

##### 5.1 Glenn Research Center Civil Servants and Support Service Contractors

- Participate in GRC’s Sustainability program activities
- Apply Sustainability strategies in making purchasing decisions and GRC policies
- Keep abreast of information on GRC’s Sustainability program, via website, [Today@Glenn](#), and in other announcements
- Ensure that collection containers are not contaminated with nonrecyclable or hazardous materials
- Support and inform the program lead on waste-reduction opportunities and/or improvements
- Support the monitoring of recycling collection areas and arrange for pickup if necessary
- Notify the program lead about container needs or issues

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## **5.2 Solid Waste Management Contracting Officer's Technical Representative**

- Awards recycling contracts
- Collects recyclable items in a timely manner throughout GRC
- Provides day-to-day management of the collection of all recyclables
- Provides program lead with monthly recycling collection reports
- Participates in GRC's Sustainability program opportunities
- Keeps abreast of information on GRC's Sustainability program activities through announcements and website
- Works with program lead to address and minimize contamination problems
- Works with program lead to pursue additional recycling or improvement opportunities
- Assists in monitoring recycling collection areas and arranging for pickup if necessary
- Monitors recycling activities to ensure compliance with established recycling procedures
- Maximizes the collection of recyclable materials and maximizes the proceeds to GRC from the sale of recyclable materials
- Provides support for transporting recycling containers
- Identifies opportunities to divert recyclables during the disposal process
- Supports the composting program

## **5.3 Building Managers and Facility Managers**

- Participates and supports in GRC's Sustainability program opportunities
- Ensure that facility personnel follow established procedures
- Help ensure that relevant sustainability best practices notification announcements are posted in prominent building locations
- Support the monitoring of recycling collection containers in and out of the building
- Help ensure that collection containers are not contaminated with nonrecyclable or hazardous materials
- Ensure that construction or rehabilitation projects include waste-reduction requirements

## **5.4 Contracting Officers and Contracting Officer's Technical Representatives**

- Participate and supports in GRC's Sustainability program opportunities
- Help ensure that personnel follow established procedures
- Support efforts to ensure that Sustainability programs requirements are met

## **5.5 Energy and Environmental Management Office**

- Oversee Sustainability program requirements, activities, in particular, regarding consistency with the EMS and other NASA policies and requirements
- Targets Sustainability projects for consideration and implementation with collaborative efforts
- Supports efforts to obtain funding for selected Sustainability projects when feasible
- Serves as GRC's official representative on Sustainability-related topics with Government and private parties

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### **5.5.1 Sustainability Program Lead**

- Manages and oversees GRC's recycling and pollution prevention program
- Manages and oversees GRC-approved Sustainability projects
- Establishes requirements for sustainability
- Provides support, guidance, training, and assistance to organizational units in implementing and promoting Sustainability activities throughout GRC
- Provides regulatory support to the Procurement Management Division, Facilities Division, and Logistics and Technical Information Division on Sustainability activities; solid-waste reduction, recycling and pollution prevention
- Forms collaborations and seeks funding for selected Sustainability activities
- Collects Sustainability data as needed for records, reports, and documents

### **5.5.2 Waste Management Team**

- Handles the diversion of universal waste for recycling
- Handles all disposals of hazardous waste
- Supports and assists in waste-reduction opportunities
- Reports waste-reduction activities to program lead
- Provides program lead with monthly recycling collection reports
- Participates in GRC's waste-reduction opportunities
- Keeps abreast of information on GRC's recycling program through announcements and website
- Works with program lead to address and minimize contamination problems
- Works with program lead to pursue additional recycling or improvement opportunities

### **5.6 Chemical Management Team**

- Participates in GRCs waste-reduction opportunities
- Seeks out new waste-reduction diversion opportunities
- Reports reduction activities to recycling lead
- Keeps abreast of information on GRC's recycling program through announcements and website
- Works with program lead to address and minimize contamination problems
- Works with program lead to pursue sustainable opportunities

**NOTE:** Chemicals and hazardous materials must be ordered through the Chemicals Purchasing Office. Green purchases shall be given preference.

## **6.0 REQUIREMENTS**

### **6.1 Source Reduction**

GRC shall eliminate or reduce pollution at the source through process changes, reengineering material substitution, and education. Specific source-reduction elements follow:

- Quantity of each chemical entering the waste stream, being recycled, treated, or disposed of
- Source-reduction best management practices used for each chemical
- Techniques to identify source-reduction opportunities

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## 6.2 Reuse

Reuse—the second choice in the hierarchy of preferred waste management practices—has been a goal of excess activities and other Logistics and Technical Information Division programs.

## 6.3 Recycling

GRC has established goals for solid-waste prevention and recycling. Recycling is the third choice in the hierarchy of preferable environmental waste-management practices. Components of GRC’s waste streams that can be recycled include (but are not limited to) paper, cardboard boxes, aluminum cans, scrap metals, tires, used oil, and batteries. GRC used these guidelines in setting up its recycling program:

- Train GRC personnel to participate in the recycling program
- Obtain appropriate approval and support for the recycling program
- Market recyclables and monitor costs and revenues associated with the recycling program.

### 6.3.1 Composting

GRC has established a program for composting food scraps. The components of GRC’s waste streams that can be composted include (but are not limited to) paper; cardboard boxes; and scrap vegetables, fruits, egg shells, and meat. GRC used these guidelines in setting up its compost program:

- Train GRC personnel to participate
- Obtain appropriate approval and support for the program
- Monitor costs and reduction associated with the program.

### 6.3.2 Treatment and Disposal

Treatment and disposal are the next two choices in the hierarchy of preferable environmental waste management. Treatment is for pollution that cannot be prevented or recycled in an environmentally safe manner. Disposal of hazardous waste is the last resort used. It shall be done legally and in an environmentally safe manner at a permit-holding treatment storage and disposal facility.

### 6.3.3 Recycling Reimbursable Funds

Funds collected from the sale of recycled goods are reinvested in the recycling program and used to support GRC’s sustainability program. Proposals can be submitted for review under the “Funds Management

## 6.4 Energy Management

GRC’s facilities maintenance organization is a prime participant in GRC’s energy-management program, which was developed in accordance with NPR **8570.1**, Energy Efficiency and Water Conservation. The maintenance organization participates in identifying and is responsible for implementing operations and maintenance procedures and/or process improvements that are in GRC’s Energy Efficiency and Water Conservation Five-Year Plan. Responsible maintenance organization staff members help conduct energy audits. GRC’s Energy Management and Control Systems data must be analyzed during the maintenance organization’s planning to identify changes that indicate maintenance problems or imminent equipment or system breakdowns. This energy-management program support must be integrated into the maintenance organization’s Annual Work Plan and 5-year plan.

## 6.5 Affirmative Procurement

GRC has established an affirmative procurement program for purchasing environmentally preferable materials as identified by the EPA in 40 Code of Federal Regulations (CFR) 247, Comprehensive Procurement Guideline for Products Containing Recovered Materials. GRC uses NASA Procedures and Guidelines (NPG) 8530.1A, to ensure affirmative procurement of environmentally preferable goods and services.

### 6.5.1 Awareness Presentations and Training

EEMO provides awareness presentations and training, both on-site and offsite, to contracting officers, contracting officer’s technical representatives, bankcard holders, Federal agencies, the vendor networking team, visitors, the community, and others. In addition, information is disseminated via **Today@Glenn** announcements, the EEMO websites, and printed literature. Topics include limiting waste generation; preventing pollution; recycling; excessing

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equipment, furniture, office materials, and construction materials; affirmative (green) procurement; and proper treatment and disposal of waste.

### 6.5.2 Review of Statements of Work, Contracts, Contract Files, and Reports

Both during the initial process and during renewals, EEMO examines statements of work (SOWs) and contracts for support services and larger contracts to ensure that sustainability language (including facility design and market research) is included.

Contract files are reviewed to ensure that attendance at training and awareness sessions, purchases of green products, and waivers (**GRC138s**) have been documented. In addition, P-card purchases (documenting green purchases) are reviewed periodically.

### 6.6 Monitoring of Collections

Containers are monitored for use and possible contamination, and waste disposal monthly reports and weights of recyclable collections are reviewed. Universal and hazardous wastes are directed to the Waste Management Team for proper disposal.

### 6.7 Applicable Documents

The following documents are used or examined during these verification steps: **GRC8095**, draft SOW, **GRC590**, **GRC150**, **NF1707**, P-Card, and **NF1634**.

## 7.0 RECORDS

Annual recycling and affirmative reports to NASA Environmental Tracking System (NETS).—Maintained by EEMO

**NF1634**, Contracting Officer Technical Representative (COTR)/Alternate COTR Delegation.—Original approved forms maintained by the appropriate contracts; copies maintained by SHED.

**NF1707**, Special Approvals and Affirmations of Requisitions.—Original approved forms maintained by the appropriate contracts; copies maintained by SHED.

## 8.0 REFERENCES

Document number	Document name
<b>40 CFR 247</b>	Protection of Environment, Comprehensive Procurement Guideline for Products Containing Recovered Materials. Part 247 of Title 40 prescribes policies and procedures for acquiring EPA-designated products through affirmative procurement programs required by the RCRA and EO 13514.
Comprehensive Procurement Guidelines (CPG):	This program is part of EPA's continuing effort to promote the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products.
DOD 6050.5	U.S. Government Disposal Methods Guidelines
DRMS–M 6050	Environmental Compliance for the DRMS Hazardous Property Program
EO <b>13514</b>	Federal Leadership in Environmental, Energy, and Economic Performance
NPD <b>8820.2</b>	Design and Construction of Facilities
NPR <b>8530.1</b>	Affirmative Procurement Program and Plan for Environmentally Preferable Products
NPR <b>8553.1</b>	Environmental Management System, Chapter 1
PL <b>94–580</b> , 1976, as amended	Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy
ORC, Title 37, Chapter 3734	Ohio Solid and Hazardous Waste Disposal Law

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Resource Conservation and  
Recovery Act (**RCRA**):

This act gives the EPA the authority to control hazardous waste from “cradle to grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for managing nonhazardous solid wastes.

**RCRA** Section 6002

RCRA, Section 6002, Solid Waste Disposal Act. Congress authorizes the CPG program under this section (PDF, 6 pp, 51K). The EPA is required to designate products that are or can be made with recovered materials and to recommend practices for buying these products. Once a product is designated, procuring Agencies are required to purchase it with the highest recovered material content level practicable.

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## APPENDIX A.—DEFINITIONS AND ACRONYMS

### Code of Federal Regulations (CFR)

**Composting.**—Decomposing organic waste, such as food scraps and yard trimmings, with microorganisms (mainly bacteria and fungi) to produce compost. Compost is organic material that can be used as a soil amendment or as a medium to grow plants.

**Comprehensive Procurement Guidelines (CPG).**—The Environmental Protection Agency CPG lists 54 items that can be purchased with recycled-content paper, re-refined oil, fly ash in concrete, and other environmentally beneficial materials. Federal agencies must require that 100 percent of purchases meet or exceed CPG unless a written justification or waiver is in effect.

### Defense Reutilization and Marketing Service (DRMS)

### Department of Defense (DOD)

### Environmental Management System (EMS)

### Environmental Protection Agency (EPA)

### Executive Order (EO)

### Federal Acquisition Regulation (FAR)

### Glenn Level Procedural Requirement (GLPR)

### International Organization for Standardization (ISO)

**NASA Environmental Tracking System (NETS).**—This NASA-wide system is utilized to track an extensive range of environmental data from all NASA facilities, including numerous pollution prevention and sustainability metrics.

### NASA Glenn Research Center (GRC)

### NASA Policy Directive (NPD)

### NASA Procedures and Guidelines (NPG)

### NASA Procedural Requirements (NPR)

### Ohio Revised Code (ORC)

### Public Law (PL)

**Release.**—Any planned or unplanned loss of toxic chemicals to the environment including air emissions, off-site transfers of chemicals, waste-water discharges, underground injections of waste, and wastes disposed of in onsite landfills. Examples include shipments of hazardous wastes to treatment, storage, and disposal facilities.

### Resource Conservation Recovery Act (RCRA)

**Solid waste.**—Any material that does not have a continuing usefulness and is being discarded may be defined as a solid waste; in general practice, a discarded material is any material (solid, liquid, or contained gas) that is abandoned (disposed of, burned, or incinerated), recycled, or considered inherently waste-like); any discarded material not specifically excluded by the Resource Conservation Recovery Act.

### Statement of Work (SOW)

**Sustainability.**—The policy defined by several Executive Orders (13148, 13149, 13150, etc.) that requires Federal facilities to go beyond traditional P2 efforts. This strategy promotes the conservation of energy and materials and programs to minimize environmental impacts of Federal facilities as well as traditional P2 activities. The sustainability EOs also requires annual reports, which overlap substantially with the scope of P2 reports.

**NOTE:** Chapter 9 of the [Environmental Programs Manual](#) provides guidance for recycling compliance in the procurement process.

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